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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,395	06/24/2003	Mohammad A. Safai	10004173-3	3063
57299	7590	07/05/2007		
Kathy Manke Avago Technologies Limited 4380 Ziegler Road Fort Collins, CO 80525			EXAMINER MADDEN, GREGORY VINCENT	
			ART UNIT	PAPER NUMBER
			2622	
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			07/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/603,395	Applicant(s) SAFAI, MOHAMMAD A.	
	Examiner Gregory V. Madden	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,10-12 and 14-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-7,10-12 and 14-18 is/are allowed.
- 6) ☒ Claim(s) 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to new claims 19-24 have been considered but are moot in view of the new ground(s) of rejection.

In regard to claim 19, the Applicant argues that the Archarya reference (U.S. Pat. 6,392,699) fails to teach that the preprocessor and postprocessor direct data to the same memory, and thus cannot teach the limitations of newly-added claim 19, which specifies that both the preprocessor and postprocessor direct images to a single memory (See Remarks, Pgs. 12-13). While the Examiner agrees that the Archarya reference alone does not teach all of the limitations of newly-added claim 19, the Applicant's arguments are moot in view of a new ground of rejection citing Archarya in view of Fukushima et al. (U.S. Pat. 6,253,023). As will be set forth in further detail below, the Fukushima reference teaches that the preprocessor can store data in a memory while bypassing a postprocessor in a first mode, and a postprocessor can store data in the same memory in a second mode. Thus, claim 19 is rejected, as are newly-added dependent claims 20-24. Please refer to the rejections below.

Finally, considering claim 1, the Applicant has included all of the limitations of previously objected-to claim 9, as well as the limitations of intervening dependent claims 2 and 8. Thus, the Examiner considers newly-amended claim 1 to be allowable over the prior art, as specified in the previous office action. Likewise, claims 3-7, 10-12, and 14-18 are also considered to be allowable based upon their dependence from allowable independent claim 1. Please refer to the Examiner's reasons for allowance set forth below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Archarya (U.S. Pat. 6,392,699) in view of Fukushima et al. (U.S. Pat. 6,253,023).

First, in regard to **claim 19**, the Acharya reference teaches a digital image processor (image processing components shown in Fig. 5) for use in a digital camera having an imaging device (sensor 600) arranged to output digital images and a memory (image array 630) for storing digital images, the digital image processor comprising a preprocessor (pixel substitution unit 615) comprising hardware for preprocessing digital images received from the imaging device and storing the digital images in the memory (630), and a postprocessor (integrated color interpolation and color space conversion module 627) comprising hardware arranged to receive digital images and postprocess the digital images into viewable form. Acharya further shows that the digital image processor is operable in a mode in which data corresponding to the preprocessed images from the preprocessor (data from 615) are directed to the postprocessor (627) for postprocessing (e.g. color interpolation) and data corresponding to postprocessed images from the postprocessor are directed to the memory (image array 630). Please refer to Figs. 5 and 6, and Col. 9, Line 51 – Col. 11, Line 57. What Acharya fails to specifically disclose is that the digital image processor is operable in a first mode in which data corresponding to preprocessed images (data from pixel substitution unit 615) from the preprocessor are directed to the memory (630), thereby bypassing the postprocessor (627), whereas the second mode is the mode wherein the data corresponding to the preprocessed images from the preprocessor are directed to the postprocessor for postprocessing

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(e.g. color interpolation) and data corresponding to the postprocessed images from the postprocessor are directed to the memory. However, noting the Fukushima reference, Fukushima teaches a digital camera (2100) wherein data corresponding to preprocessed images from a preprocessor (process circuit 2004) can either be directed to a memory (2008), thus bypassing postprocessing (via compression circuit 2006) in a first mode, or alternatively, in a second mode, the data corresponding to the preprocessed images from the preprocessor (2004) is directed to the postprocessor (2006) for postprocessing (e.g. compression).

Fukushima teaches this limitation in Fig. 15 and Col. 28, Lines 35-56. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included the ability to bypass the postprocessing step, as shown by Fukushima, with the image processing of Acharya. One would have been motivated to do so because by bypassing postprocessing in certain instances, unnecessary compression and other processing (such as when high-resolution images are desired) can be avoided, and thus total processing time and power consumption can be reduced, which the Fukushima reference shows as being desirable in Col. 3, Lines 39-43.

As for **claim 20**, the limitations of claim 19 are taught above, and Acharya further teaches that the digital image processor comprises a system bus (bus 660) within the digital image processor, wherein the preprocessor (pixel substitution unit 615), the postprocessor (integrated color interpolation and color space conversion module 627), and an interface for the memory (image array 630) are coupled to the system bus. Again, please refer to Fig. 5 and Col. 9, Line 51 – Col. 11, Line 57.

Considering **claim 21**, the limitations of claim 20 are taught above by Acharya, and the Acharya reference further teaches that the postprocessor (627) includes a color interpolator arranged to derive an unknown pixel color value associated with a first pixel based upon at least one known pixel color value associated with at least one other pixel using pixel color weight factors associated with an image sensor in the imaging device (600), as is taught in Col. 4, Line 37 – Col. 5, Line 60, and Col. 10, Lines 21-58.

In regard to **claim 22**, the limitations of claim 21 are taught above, and Acharya further teaches that a color pattern setting buffer (from RAM 628 connected to integrated color interpolation and color space conversion module 627) that is connected to the color interpolator and capable of storing image sensor data associated with the image sensor included in the imaging device (600), the image sensor being used to derive the associated pixel color weight factors. Please refer to Col. 4, Line 37 – Col. 5, Line 60, and Col. 10, Lines 21-58.

Next, considering **claim 23**, again the limitations of claim 20 are set forth above, and Acharya teaches that the postprocessor (627) is arranged such that its operation does not interfere with the operation of the preprocessor (615) or taking pictures using the digital camera. Note in Fig. 5 that the postprocessor (627) and preprocessor (615) are separately connected to the system bus (660), and therefore the operation of the preprocessor does not rely on the operation of the postprocessor, nor does the operation of the digital camera imaging device. Please refer further to Col. 9, Line 51 – Col. 11, Line 57.

Finally, regarding **claim 24**, the Acharya reference discloses a digital camera (camera 730) comprising an imaging device (sensor 600) arranged to output digital images, a digital image processor (image processing circuit 732) as recited in claim 1 (see above), and a memory (image memory unit 734) for storing the digital images. Please refer to Figs. 5 and 6, and Col. 9, Line 51 – Col. 11, Line 57.

Allowable Subject Matter

Claims 1, 3-7, 10-12, and 14-18 are allowed.

The following is an examiner's statement of reasons for allowance:

In regard to independent **claim 1**, as stated in the previous office action, the prior art was not found to teach or reasonably suggest, in conjunction with the additional limitations of claim 1, a preprocessor that includes a programmable sampling filter connected to the non-uniformity corrector, a

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modular transformer connected to the programmable sampling filter, and a ditherer connected to the modular transformer.

As for **claims 3-7, 10-12, and 14-18**, these claims depend either directly or indirectly from allowable claim 1, and are thus considered to be allowable over the prior art as well.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory V. Madden whose telephone number is 571-272-8128. The examiner can normally be reached on Mon.-Fri. 8AM-5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Madden
June 12, 2007

A handwritten signature in black ink, appearing to read 'Ngoc-Yen Vu', with a long horizontal flourish extending to the right.

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER